

1
2 IN THE UNITED STATES DISTRICT COURT
3 SOUTHERN DISTRICT OF NEW YORK
4

5 IN RE: EPHEDRA PRODUCTS
6 LIABILITY LITIGATION

-----)

7 PERTAINS TO:)

8 HARBIR SINGH, et al. v.)

9 Herbalife International)

Communications, Inc., et)

10 al.)

11 -----)

12
13
14 DEPOSITION OF BRUCE CHARLES ZABLOW
15 New York, New York
16 Wednesday, January 10, 2007
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19
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21
22

23 Reported by:

PENNY SHERMAN

24 JOB NO. 9935
25

January 10, 2007
2:00 p.m.

Deposition of BRUCE CHARLES ZABLOW,
held at the offices of Heidel, Pittoni,
Murphy & Bach, 99 Park Avenue, New York,
New York, pursuant to Subpoena, before
Penny Sherman, a Notary Public of the State
of New York.

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IT IS HEREBY STIPULATED AND AGREED, by
and between the attorneys for the respective
parties herein, that filing and sealing be and
the same are hereby waived.

IT IS FURTHER STIPULATED AND AGREED that
all objections, except as to the form of the
question, shall be reserved to the time of the
trial.

IT IS FURTHER STIPULATED AND AGREED that
the within deposition may be sworn to and
signed before any officer authorized to
administer an oath, with the same force and
effect as if signed and sworn to before the
Court.

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Zablow

BRUCE CHARLES ZABLOW, called
as a witness, having been duly sworn by a
Notary Public, was examined and testified as
follows:

EXAMINATION BY
MR. McGOWEN:

**Q. Good afternoon, doctor. May I ask you
to state your full name for the record.**

A. Bruce Charles Zablow.

**Q. My name is Fred McGowen. I am with the
law firm of Goodwin Procter. Goodwin Procter
represents the defendants in this case: Two
Herbalife entities and a gentleman named Steve
Peterson.**

**I will be asking you a number of
questions today. If I ask you a question and you
don't hear me well or the question doesn't make
sense to you, please just let me know and I will
rephrase it or repeat it for you. And it's
important that your answers be verbal so our
reporter can record what you're saying. And it's
also important that we not talk at the same time
and that helps the reporter keep a clear record.**

If you want to take a break at any time,

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1 **Zablow**
2 please just say so.
3 **Do you have a CV with you today?**
4 A. Yes, I do.
5 **Q. May I just take a look at that?**
6 **Is your CV current?**
7 A. I believe it is.
8 **Q. Are you presently studying for any**
9 **additional degree or certificate or license?**
10 A. No.
11 **Q. Doctor, do you practice medicine?**
12 A. Yes, I do.
13 **Q. What is your specialty or specialties?**
14 A. I am a neuroradiologist and my
15 subspecialty is interventional neuroradiology and
16 endovascular neurosurgery.
17 **Q. Doctor, have you ever been an employee**
18 **or a consultant for any designer, manufacturer or**
19 **distributor of pharmaceutical products?**
20 A. No.
21 **Q. Have you ever been an employee or**
22 **consultant for any designer or manufacturer or**
23 **distributor of nutritional supplements?**
24 A. No.
25 **Q. Have you ever authored or conducted or**
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1 **Zablow**
2 participated in any research with respect to
3 pharmaceutical products or nutritional supplements?
4 A. No.
5 **Q. Doctor, your CV includes a list of**
6 presentations, and in addition to that, have you
7 authored any publications?
8 A. Yes, I have.
9 **Q. Do you have a list of the publications**
10 **that you've authored?**
11 A. Not with me.
12 **Q. Have any of the publications that you**
13 **have authored concerned Ephedra or sympathometic**
14 **preparations, S-Y-M-P-A-T-H-O-M-E-T-I-C?**
15 A. No.
16 **Q. Doctor, in the past, have you ever been**
17 **a party or witness in a lawsuit that concerned**
18 **Ephedra or sympathometic preparations?**
19 A. No.
20 **Q. In the future, have you agreed to be a**
21 **witness in the future in any lawsuit where a party**
22 **alleges injury as a result of ingesting a**
23 **nutritional supplement or a sympathometic type of**
24 **product?**
25 A. No.
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1 **Zablow**
2 **Q. Doctor, have you ever worked as an**
3 **expert witness before?**
4 A. Yes.
5 **Q. How many times?**
6 MR. BACH: What do you mean by that?
7 How many times has he been retained or
8 testified?
9 **Q. How many times have you been retained?**
10 A. In what capacity?
11 **Q. As an expert witness, either to consult**
12 **with a party or to provide a report or provide**
13 **testimony in court or a deposition.**
14 A. The answer is, yes, I have, and the
15 answer is, multiple times.
16 **Q. Have any of those cases involved**
17 **patients who had strokes of any type?**
18 A. Yes. I've been an expert witness in
19 cases that involve patients with strokes.
20 **Q. In those cases involving patients who**
21 **had had strokes, did any of those cases concern**
22 **whether that stroke resulted from the ingestion of**
23 **any particular product?**
24 A. No.
25 **Q. Have you ever heard or read --**
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1 **Zablow**
2 A. No, I think that's not correct.
3 **Q. Okay.**
4 A. I think there -- I redact that. There
5 was one case that I think I was involved as an
6 expert in a case where there was a history of
7 cocaine or methamphetamine, one of those two. I
8 forget.
9 **Q. Do you remember what year you provided**
10 **expert services in that case?**
11 A. Probably in the last five years.
12 **Q. Were you an expert for the plaintiff or**
13 **the defendant in that case?**
14 A. I believe I was an expert for the
15 defense since I was a -- in part, a treating
16 physician.
17 **Q. So this was someone --**
18 A. I was a treating physician.
19 **Q. This was someone who had been your**
20 **patient who was the plaintiff?**
21 A. It was somebody that I had done a
22 diagnostic examination of, who was a patient at the
23 hospital, but I was not a party to the lawsuit.
24 **Q. When you say a patient at the hospital,**
25 **what hospital --**
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1 **Zablow**
2 A. St. Vincent's Hospital.
3 **Q. Do you remember that patient's name?**
4 A. No, I don't.
5 **Q. Were you first contacted by an attorney**
6 **with respect to working as an expert in that case?**
7 A. Was I -- I'm sorry, was I first
8 contacted by --
9 **Q. By an attorney.**
10 A. I believe I was contacted by the defense
11 firm for the defendant --
12 **Q. Okay.**
13 A. -- who was an attending physician at the
14 same hospital that I was, where the patient was
15 treated.
16 **Q. Do you remember the name of the firm**
17 **that represented that?**
18 A. Yes, I do.
19 **Q. What was the name?**
20 A. Heidel, Pittoni.
21 **Q. Do you know what court that case had**
22 **been filed in?**
23 A. Yes.
24 **Q. What court was that?**
25 A. I believe it was in New York County, New
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1 **Zablow**
2 York Supreme.
3 **Q. Do you know how that case was resolved,**
4 **whether it settled or went to a trial and had a**
5 **verdict?**
6 A. Went to trial.
7 **Q. And a verdict was issued?**
8 A. I don't remember the verdict.
9 **Q. What was the substance of your opinion**
10 **in that case?**
11 A. That the patient had a cerebral
12 aneurysm, and that the patient had a subarachnoid
13 hemorrhage from the aneurysm, and that there were
14 vascular changes on the angiogram that indicated
15 that the patient had a vasculitis in addition to
16 the aneurysm, and that the likely cause of the
17 subarachnoid hemorrhage and complications from the
18 subarachnoid hemorrhage were related to the
19 ingestion of, in part, due to the ingestion of
20 these substances.
21 **Q. The ingestion of the cocaine or the**
22 **methamphetamine, was that related to the --**
23 A. Subarachnoid hemorrhage.
24 **Q. Vascular changes.**
25 A. Related to the subarachnoid hemorrhage
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1 **Zablow**
2 not related to the formation of the aneurysm.
3 **Q. Was there a particular mechanism by**
4 **which or through which the cocaine and/or**
5 **methamphetamine contributed to vascular changes?**
6 A. Yes.
7 **Q. What was that?**
8 A. The patient had a vasculitis,
9 inflammatory vasculitis, and the likely cause of
10 the ruptured aneurysm was the fact that there was a
11 vasculitis, but also an exacerbation of blood
12 pressure --
13 **Q. Okay.**
14 A. -- commonly associated with the use of
15 those drugs.
16 **Q. Doctor, have you ever heard or read the**
17 **name, Herbalife?**
18 A. No.
19 **Q. Never communicated with anyone who you**
20 **believe to be associated with Herbalife?**
21 A. No.
22 **Q. Have you ever communicated orally or in**
23 **writing with any governmental agency with respect**
24 **to Ephedra?**
25 A. No.
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1 **Zablow**
2 **Q. Have you ever done any research or given**
3 **any presentations that concerned Ephedra?**
4 A. No.
5 **Q. Doctor, this is a copy of a subpoena and**
6 **I'm just going to ask you if that is a copy of the**
7 **subpoena that you received.**
8 A. It looks like it could be.
9 MR. McGOWEN: All right. So I'm just
10 going to ask the reporter to mark this for us
11 and we'll continue, and also we will get the
12 CV marked.
13 (Zablow Exhibit 1, Copy of Subpoena,
14 marked for identification, as of this date.)
15 (Zablow Exhibit 2, CD of Dr. Bruce
16 Charles Zablow, marked for identification, as
17 of this date.)
18 MR. McGOWEN: Can we take a short,
19 five-minute break? He's going to set up a
20 computer for me.
21 Actually, if we can just stay on the
22 record.
23 **Q. Doctor, did you bring anything with you**
24 **today, any documents or things relating to**
25 **Mr. Singh or in response to the subpoena?**
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A. Only copies of his angiograms, selected films of his angiograms, films that were involved in the treatment of his aneurysm.

Q. I have brought along with me a copy of the entire chart that I received from St. Vincent's Hospital. I'm going to mark it. You may or may not want to refer to it. It's just here if you need it.

MR. McGOWEN: So this is going to be Exhibit 3A and 3B.

(Zablow Exhibit 3A, Copy of Harbir Singh's chart from St. Vincent's Hospital, marked for identification, as of this date.)

(Zablow Exhibit 3B, Copy of Harbir Singh's chart from St. Vincent's Hospital, marked for identification, as of this date.)

Q. So, Doctor, in the event you want to locate something in either of those two binders, I have with me a rough index of what's in these two binders, so I can probably assist you in finding any document you're looking for.

I also have separate copies of pages from the record that we will use and we'll just mark those separately.

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MR. McGOWEN: We might as well take a short break while we finish up here.
(Discussion off the record.)

Q. Doctor, did you review anything to prepare for the deposition today?

A. No.

Q. Other than your counsel, was there anyone who you discussed this case or this deposition with?

A. No.

Q. Have you had any communication with the plaintiff in this lawsuit, Harbir Singh, or the co-plaintiff --

A. No.

Q. -- Ms. Caragata, since the time that you provided treatment to Mr. Singh?

A. No.

Q. Do you have a recollection, independent of any hospital record or anything, of who Mr. Singh is?

A. Just a vague recollection. I remember what bed he was in.

Q. You remember what bed he was in?

A. In the intensive care unit.

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Q. Do you have any recollection of Mr. Singh's wife, Ms. Caragata, Doina Caragata, D-O-I-N-A, C-A-R-A-G-A-T-A?

A. No.

Q. Do you recall any friend or family members who might have visited Mr. Singh?

A. No.

Q. Did you make any records regarding your treatment of Mr. Singh, other than what might appear in the St. Vincent's chart or radiological scans?

A. No.

Q. Do you know on what date you first had any contact with Mr. Singh?

A. Independently, no.

Q. Why don't we try to just establish the period of time that you provided any treatment to Mr. Singh.

I believe from my review of the record that Mr. Singh's hospitalization at St. Vincent's began on May 10th of 2003. And let me just show you two pages from the hospital chart from the progress note section dated May 10th. And can you tell me, are those your notes?

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A. Yes, they are.

Q. Do those notes refresh your recollection at all -- I'll let you read and then I'll ask you a question.

A. These would be my treatment records from the day that I treated Mr. Singh.

Q. Okay.

A. Which would probably be shortly after him coming to the hospital.

Q. Okay. So, does it appear that your treatment of Mr. Singh began on the first day of his hospitalization at St. Vincent's on May 10, 2003?

A. Yes.

Q. Can we establish the last date that you provided any treatment to Mr. Singh?

Why don't I ask that this way: Did you perform any procedures on Mr. Singh at St. Vincent's?

A. Yes.

Q. I will show you records dated May 12th of 2003.

MR. McGOWEN: Why don't we go ahead and mark this as -- mark the May 10th notes as

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1 Zablow

2 Exhibit 4.

3 (Zablow Exhibit 4, Progress notes dated
4 May 10, 2004, marked for identification, as of
5 this date.)

6 MR. McGOWEN: And then let's mark 5 and
7 6.

8 (Zablow Exhibit 5, Record of a cerebral
9 angiogram performed on Harbir Singh, marked
10 for identification, as of this date.)

11 (Zablow Exhibit 6, Record of
12 endovascular treatment of cerebral aneurysm
13 performed on Harbir Singh, marked for
14 identification, as of this date.)

15 **Q. So, if we could look at what we've**
16 **marked as Exhibits 5 and 6. Do those records --**
17 **are those records of the procedure that you**
18 **performed on Mr. Singh?**

19 A. Yes, two procedures.

20 **Q. What procedures did you perform?**

21 A. The first procedure was a cerebral
22 angiogram. And second procedure was endovascular
23 treatment of the cerebral aneurysm.

24 **Q. These procedures were performed on May**
25 **12th of 2003; is that correct?**

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2 A. No. They were performed on the 10th.

3 **Q. On the 10th. Okay.**

4 A. Yeah. I think the computer here
5 probably made a typographical error, because my --
6 the hospital record indicates he was admitted on
7 the 10th, and my operative notes that I handwrote
8 on the 10th are on the 10th.

9 MR. BACH: Dr. Zablow is referring to
10 Plaintiffs' Exhibit 4, his handwritten notes.

11 **Q. Doctor, after performing these**
12 **procedures, did you have any further contact with**
13 **Mr. Singh?**

14 A. I would have seen him periodically when
15 he was in the intensive care unit.

16 **Q. How did you, if you recall, how did you**
17 **become involved in Mr. Singh's care?**

18 A. I became involved because he was
19 admitted to the hospital, and sometime, probably
20 midday on the 10th, and he was -- had a CAT scan
21 done in the hospital that indicated that there was
22 a subarachnoid hemorrhage. And I was -- I would
23 have been contacted by a neurosurgical resident
24 from our service who would have contacted me
25 regarding what the findings were.

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2 And at that point, they would have
3 initiated a request for me to do a cerebral
4 angiogram. And if the anatomy of the aneurysm was
5 such that he was amenable to it, that I would treat
6 the aneurysm after having completed the diagnostic
7 portion of the test.

8 **Q. When you wrote your first note, would**
9 **that have been the time when you first had contact**
10 **with Mr. Singh?**

11 A. That would have been shortly after I had
12 contact with him.

13 **Q. Okay.**

14 A. Probably just prior to instituting
15 the -- getting started to do the procedure.

16 **Q. Had he already had that first CT scan at**
17 **the time that you first saw him?**

18 A. He would have had it done at that point.

19 **Q. When you first had contact with**
20 **Mr. Singh, did you perform a physical examination?**

21 A. I would have performed a cursory
22 neurological examination.

23 **Q. Did you order any additional tests at**
24 **the time that you first saw Mr. Singh?**

25 A. He would have had all of the testing

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2 that would have been required for the purposes of
3 surgery done in the emergency room. That would
4 have all have been done before he got to me.

5 **Q. Would that have been, in terms of**
6 **radiology, what, in addition to the CT scan that he**
7 **initially had, would he have had or did he have?**

8 A. Without reviewing the medical record, I
9 would know. The only thing that I could imagine
10 that he could have possibly had would have been a
11 chest x-ray, if he had that done.

12 **Q. In terms of medical history, what**
13 **information was available to you about Mr. Singh on**
14 **May 10, 2003?**

15 A. Very, very limited. My note indicates
16 that because of his neurological dysfunction at the
17 time that he was admitted to the hospital, that he
18 wasn't comatose, but he was severely drowsy and not
19 really very capable of being able to provide much
20 in the way of information.

21 And it indicates that because of the
22 level of consciousness that the consent for
23 performing these procedures had to be done by the
24 cooperation of two treating physicians to make that
25 decision since he wasn't sufficiently able to give

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2 any informed -- to have an informed consent
3 discussion with him.

4 **Q. Which two treating physicians were
5 involved in making that decision?**

6 A. It would have been myself and it would
7 have been one of the other physicians. I can't
8 tell you who that would have been.

9 **Q. Okay.**

10 A. It might be on the surgical consent
11 form. It's possible.

12 **Q. Did you have any information on May 10th
13 of 2003 with respect to medications or nutritional
14 supplements that Mr. Singh may have been taking?**

15 A. No.

16 **Q. At any time during your treatment of
17 Mr. Singh, did you ever have any information
18 concerning whether he had ever ingested an
19 Ephedra-containing product?**

20 A. Not to my knowledge.

21 **Q. So, doctor, in determining -- you've
22 already indicated that you did perform a procedure
23 on Mr. Singh. So in determining whether to perform
24 that procedure, what information did you consider?**

25 A. Well, first consideration would be what

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2 the nature of the disease was, which was a
3 subarachnoid hemorrhage. The second consideration
4 was his level for clinical grade; in other words,
5 what's called a Hunt and Hess scale, H-U-N-T,
6 H-E-S-S, which is basically a grading scale for
7 patients who have subarachnoid hemorrhage as to
8 their level of consciousness and if they have a
9 degree of neurological dysfunction.

10 And the other factor that goes into this
11 is the -- would be the appearance of the blood on
12 the CT scan as to the -- there's a grading scale
13 for the CT scan as to the severity of the bleed.
14 And that would be the -- that would really be the
15 basic information.

16 And the other information that we would
17 look at would be whether or not there are any
18 contraindications to proceeding. With surgery,
19 that would largely be anesthetic complications that
20 would contraindicate whether or not he was a
21 candidate for general anesthesia.

22 **Q. So, did you look at this information and
23 come to the conclusion that surgery should be
24 performed?**

25 A. Yes.

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2 **Q. And you mentioned the nature of the
3 disease being subarachnoid hemorrhage. You
4 mentioned the Hunt and Hess scale. What was
5 Mr. Singh's -- where did he fall on that scale?**

6 A. Well, the scale is basically grades zero
7 through five. Zero is, you don't have a bleed.
8 Grade five is that you're in a coma.

9 So Mr. Hess was a -- Mr. Singh was grade
10 three, which meant he was sleepy but arousable. So
11 he was not at the point where he was in a coma, but
12 he was neurologically impaired, and he didn't have
13 a fixed neurological deficit at that point, meaning
14 a cranial nerve dysfunction or a hemipalgia or
15 something of that sort.

16 **Q. You also mentioned that you considered
17 the appearance of the blood on the scan as to the
18 severity of the bleed. What were your findings in
19 that regard?**

20 A. Well, there's a scale for grading a
21 subarachnoid hemorrhage, which is basically one
22 through four, one being minimal blood, grade four
23 is a significant amount of blood. And he was a
24 grade four, which meant he had a very significant
25 amount of blood in the brain, in the subarachnoid

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2 space, also in the ventricles.

3 He also did not show improvement in his
4 neurological state, because the ventriculostomy had
5 already been placed in him by one of my nurses or
6 colleagues, which is a drainage catheter to drain
7 the blood from the brain, drain the spinal fluid
8 from the brain to the outside environment to
9 relieve the intracranial pressure. That didn't
10 change his neurological status.

11 **Q. Prior to actually performing any
12 procedure on May 10th of 2003, did you consider any
13 potential etiologies for Mr. Singh's subarachnoid
14 hemorrhage?**

15 A. Well, about 90 percent of subarachnoid
16 hemorrhage is caused by an aneurysm. So if you
17 hear hoof beats, like with horses, so...

18 **Q. So you have a strong suspicion at that
19 point that it was --**

20 A. It was an aneurysm. Ruptured cerebral
21 hemorrhage.

22 **Q. And was there any other potential
23 etiology that you were considering at that time?**

24 A. Well, the other causes for subarachnoid
25 hemorrhage are generally intravenous malformations

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2 of the brain. And the pattern of the blood on the
3 CT scan and the severity of the blood on the CT
4 scan pretty much go against that.

5 **Q. So you were -- it seems like you were**
6 **fairly sure that this was an aneurysm situation**
7 **before you actually did the procedure?**

8 A. Yes. I was very sure that that's what
9 we would find.

10 **Q. If we could look at Exhibits 5 and 6, I**
11 **believe are your procedure reports.**

12 **Actually, doctor, before we look at**
13 **that, can we look back at Exhibit 4 and may I just**
14 **ask you to read your 4:00 p.m. preop note.**

15 A. Preop note: 41-year-old male with
16 subarachnoid hemorrhage. Hunt and Hess grade
17 three. Fisher grade four with diffuse blood on CT
18 scan. Status post ventriculostomy on the right for
19 hydrocephalous. Currently intubated on diprivan
20 drip for sedation. Emergency angiography requested
21 to evaluate subarachnoid hemorrhage for probable
22 aneurysm. Plaintiff's wife left hospital. Angio
23 and endovascular surgery if needed to be performed
24 to treat aneurysm to be done under 2MDPC. Case
25 discussed with Dr. Hirschfeld. CT scan reviewed.

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2 **Q. And we already talked about what your**
3 **observations were with respect to the CT scan?**

4 A. Yes.

5 **Q. Doctor, let me go ahead and ask you to**
6 **read the 8:20 p.m. operative note.**

7 A. Operative note. Procedures: Four
8 vessels cerebral angiography, GDC coiling of left
9 intracranial, left internal carotid intracranial
10 bifurcation aneurysm. Postoperative left internal
11 carotid cerebral angiogram. Surgeon: Zablow.
12 Anesthesiologist: Levin, general anesthesia.

13 Findings: 7.1 by 4.7 millimeter
14 bilobed, left internal carotid artery bifurcation
15 aneurysm, injecting superiorly, posteriorly with
16 fundal teat, T-E-A-T, present on dome. No
17 vasospasm at present. No other aneurysm seen.
18 Discussed with Alan Hirschfeld regarding findings
19 and treatment.

20 Treatment: Aneurysm densely coiled with
21 4GDC10 coils. Excellent packing. No prolapse into
22 ICA bifurcation. No distal emboli seen. No vital
23 sign changes throughout the procedure. Patient to
24 have CT scan postoperative tonight.

25 **Q. So, doctor, you described performing a**

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2 **coiling procedure. What was your objective in**
3 **performing that procedure?**

4 A. To try to exclude the aneurysm from the
5 cerebral circulation.

6 **Q. Is that another way of saying that you**
7 **were trying to stop the flow of blood from the**
8 **aneurysm?**

9 A. Correct.

10 **Q. Were you successful in doing that?**

11 A. Yes, I was.

12 **Q. Now, if we could look at Exhibit, I**
13 **believe it's 6. Let's look at Exhibit 6 on page 2.**

14 MR. RHEINGOLD: Can we identify what
15 that is?

16 MR. MCGOWEN: I'm just about to ask him
17 to do that.

18 **Q. Doctor, can you tell me what is that**
19 **that you're looking at in Exhibit 6?**

20 A. It's the last paragraph of the
21 description of the operative procedure and the
22 paragraphs that deal with the findings and the
23 impression.

24 **Q. In the paragraph where you describe your**
25 **findings, you write, There is a peculiar appearance**

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2 **of the cervical left internal carotid artery, which**
3 **has the appearance of dysplasia and most likely**
4 **fibromuscular dysplasia, although it does not have**
5 **the class classic string-of-pearl appearance**
6 **commonly seen with FMD.**

7 **Doctor, when you wrote this in your**
8 **findings, what was the importance of this**
9 **information?**

10 A. Only that on the angiography, the
11 appearance of that artery in the left side of the
12 neck, which supplies the left side of the brain,
13 had an unusual appearance, which usually is an
14 indication that there's some sort of an arterial
15 wall problem with the wall of the artery.

16 **Q. Did you believe that this peculiarity of**
17 **the cervical left internal carotid artery was**
18 **related to Mr. Singh's having this aneurysm?**

19 A. There's an association between people
20 who have dysplastic arteries and intracranial
21 aneurysms. It's not a one-to-one relationship, but
22 it's probably not unrelated. Cerebral aneurysms
23 are congenital. There was nothing atypical about
24 the appearance of his aneurysm or the location of
25 the aneurysm. That was atypical for a berry

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2 aneurysm.

3 So other than the fact that they're
4 associated with what can be seen in three to five
5 percent of the general population, there was
6 nothing particularly abnormal about the aneurysm
7 itself that suggested that, in and of itself, it
8 wasn't just a congenital berry aneurysm. But there
9 is an association between dysplastic arteries and
10 aneurysms.

11 **Q. In your next sentence you write -- well,**
12 **two sentences later, At the current time, no**
13 **evidence of vasospasm is noted.**

14 **Why did you make that notation?**

15 A. Well, vasospasm is an event that's
16 precipitated by blood in the subarachnoid space and
17 can also be precipitated by exogenous things that
18 can be ingested like drugs, cocaine, amphetamines,
19 where the arteries in the brain can have an
20 abnormal or spastic looking appearance. And he
21 didn't have it.

22 The other implication of this is that
23 sometimes when people have ruptured aneurysms and
24 they present to the hospital, the actual event that
25 brings them to the hospital may have been preceded

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2 by a bleed that may have occurred several days
3 before and may not have really been noticed by the
4 plaintiff. They might have had a headache, but it
5 might not have been a catastrophic headache.

6 If vasospasm is present at the time of
7 the angiogram, the overwhelming likelihood is that
8 it didn't get there in a couple of hours. It
9 usually takes a few days for it to develop. So the
10 mere fact that it wasn't present is an indication,
11 in conjunction with the patient's indication, that
12 his symptoms started at 11 o'clock in the morning
13 on the same day that he presented to the hospital,
14 that he had not had a previous hemorrhage, or at
15 least not one that produced vasospasm, and that the
16 event that resulted in coming to the hospital was
17 probably the event that he described at 11 o'clock
18 in the morning.

19 **Q. At the -- on the same page, the very**
20 **last -- the second to the very last sentence, it**
21 **seems to indicate evidence of vasospasm bleed?**

22 A. That's typographical.

23 **Q. So that should be no evidence?**

24 A. Right. It's typographical.

25 **Q. So, doctor, you mentioned that the**

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2 **appearance of the cerebral left internal carotid**
3 **artery -- were you saying that that appearance was**
4 **an indication of an arterial wall problem?**

5 A. Yes.

6 **Q. Did the appearance of the artery tell**
7 **you or suggest to you for what period of time that**
8 **wall problem had been in existence?**

9 A. No. The one thing it -- that is evident
10 from the angiogram is that the problem is not a
11 hemodynamic flow-related problem involving the
12 brain in the sense that if the cerebral circulation
13 is put together in a way that one of the carotid
14 arteries is the dominant of the two carotid
15 arteries and is supplying a disproportionate amount
16 of vascular territory in the brain, then there may
17 be hemodynamic consequence with regards to the
18 arteries that are in the neck that come off the
19 aorta that will supply the brain.

20 In this particular circumstance, the
21 dominant carotid artery circulation is actually
22 contralateral right side. So that would indicate
23 that the changes in the carotid artery on the left
24 side were not the result of hemodynamic stress on
25 the carotid artery, but rather that there's some

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2 sort of a collagen vascular problem or wall problem
3 with the wall of the artery.

4 MR. BACH: Would you just read back the
5 last sentence?

6 (The last sentence of answer was read.)

7 **Q. So, doctor, when you say that it did not**
8 **appear that a hemodynamic problem was present, are**
9 **you saying that there did not appear to be issues**
10 **with too little or too much blood flow?**

11 A. No. What I'm saying is that if there's
12 an artery that's subject to hemodynamic stress
13 because it's carrying more blood than it needs to
14 carry because of the way that the cerebral
15 circulation is supplied, that you may see some
16 changes in the caliber or tortuosity of the
17 arteries or other findings in the arteries that
18 would be abnormal, but could be based on the fact
19 that there's more stress on the wall of the artery
20 because of the hemodynamics of how the brain is
21 being supplied.

22 In this situation, the contralateral or
23 right carotid system is the dominant system. The
24 reason we know that, as I indicated in my report,
25 that both of the anterior cerebral arteries were

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2 filling from the right side, which means that a
3 portion of the left side of the brain, as well as
4 the whole right side of the brain, was being
5 supplied by the right carotid system.

6 So the right carotid system was the one
7 carrying more flow than it would normally carry.
8 Again, this is developmental, but that the left
9 side basically not being the dominant system was
10 not subjected to any kind of unusual hemodynamic
11 stress.

12 **Q. Doctor, am I correct in that you stated**
13 **that the bleed did not appear to be the result of**
14 **any exogenous substance having been ingested?**

15 A. No. What I said was that there wasn't
16 anything evident angiographically that would
17 indicate that this was anything other than a
18 routine rupture of a berry aneurysm.

19 **Q. Something that Mr. Singh had had from**
20 **the time of his birth?**

21 A. It's thought that cerebral aneurysms are
22 congenital, and why they rupture or how they
23 rupture or when they rupture is not precisely
24 known, but that they are -- that the weakness in
25 the artery is there from birth and the aneurysm may

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2 be there. It may at some point rupture, so...

3 **Q. Was there -- did you make any**
4 **determination during your treatment of Mr. Singh as**
5 **to any particular reason why his aneurysm ruptured**
6 **when it did?**

7 A. Yes. The reason it ruptured is that the
8 aneurysm had developed to teats on the dome of the
9 aneurysm which are areas where the wall of the
10 aneurysm are focally weaker than other portions.
11 And in an aneurysm that he had, those -- it's a
12 bifurcation aneurysm arising at the, what we call
13 the termination of a major artery into two other
14 arteries.

15 Aneurysms that arise in that kind of
16 configuration are susceptible to a lot of stress on
17 the dome of the aneurysm because of the way the
18 blood flows from one artery into the aneurysm
19 before the aneurysm bifurcates into two other
20 vessels. It's like a T.

21 So bifurcation aneurysms of this type
22 are generally very dangerous aneurysms because of
23 the fact that they're subject to a lot of stress,
24 which is why they form in the first place. And
25 then they are subject to rupturing because of the

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2 fact that the dome of the aneurysm is subjected
3 even to more stress than say an aneurysm that
4 arises on the side wall of an aneurysm. This is
5 what we call a bifurcation aneurysm or a T
6 aneurysm.

7 And that type of an aneurysm is
8 particularly dangerous. When they develop these
9 teats on the aneurysm, that's generally where the
10 aneurysm ruptures from. So over time, they form
11 the aneurysm. Then the aneurysm enlarges. In
12 time, the teats form, and then at some point, one
13 of the teats ruptures, and that's how it all
14 occurs.

15 **Q. So if we -- can we actually think, if we**
16 **have the letter T image in our heads, where on that**
17 **letter T would those two teats or were these two**
18 **teats?**

19 A. The aneurysm is at the -- the aneurysm
20 is at the end of the internal carotid artery before
21 it divides into the anterior cerebral and middle
22 cerebral artery. The teats are on the top of the
23 dome of the aneurysm, which in Mr. Singh, was
24 slightly towards the anterior cerebral side.
25 Excuse me, I correct that. It was slightly towards

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2 the middle cerebral side.

3 **Q. And did you -- did you make any**
4 **determination during your treatment of Mr. Singh --**
5 **strike that.**

6 **So, are you saying that over time, the**
7 **stress on this aneurysm, particularly due to its**
8 **location, inevitably led to this bleed?**

9 MR. McGOWEN: Objection to form.

10 **Q. He's just stating his objection.**

11 MR. BACH: You can answer.

12 A. Can you repeat what you said?

13 **Q. Sure. Sure.**

14 **Are you saying that the stress on this**
15 **aneurysm, particularly due to where it was located,**
16 **inevitably led to the bleed?**

17 A. Yes.

18 MR. RHEINGOLD: Objection to form.

19 **Q. Did you make any or did you find during**
20 **the course of your treatment of Mr. Singh, that**
21 **there was anything that contributed; other than the**
22 **passage of time and the stress on the aneurysm, is**
23 **there anything that contributed to the bleed?**

24 MR. RHEINGOLD: Objection to form.

25 MR. BACH: You can answer.

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2 A. The only other finding that I found on
3 the angiogram was the presence of the abnormality
4 in the cervical carotid artery on the left side,
5 which could indicate that there's -- that there may
6 be a contributing wall factor problem with the
7 cerebral artery.

8 **Q. Okay. Now, is this what we were talking**
9 **about before?**

10 A. Yes.

11 **Q. You mentioned a collagen vascular issue**
12 **that relates to this wall problem. Did you make**
13 **any determination during your treatment of**
14 **Mr. Singh of what -- of why he had this wall**
15 **problem?**

16 MR. RHEINGOLD: Objection to form.

17 A. The presence of a dysplastic artery on
18 an angiogram is very nonspecific. It doesn't tell
19 you what the microscopic pathology is. It has a
20 certain appearance that lends itself to a spectrum
21 of diseases that can be associated with this. The
22 most common of the diseases that are associated
23 with it is fibromuscular. Overwhelmingly, that's
24 the most likely possibility.

25 The other abnormalities that can be

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2 associated with arterial dysplasias are very, very
3 uncommon and they have other manifestations in
4 other organ systems.

5 So, in and of itself, the over -- given
6 the fact that it did not look like that the
7 dysplasia was related to atherosclerosis, and given
8 the fact that it was unilateral and did not involve
9 other of the cerebral arteries or the precerebral
10 arteries, the likelihood is based on my experience,
11 with almost 30 years of doing this, that that's
12 what probably this was, some sort of a dysplasia,
13 which FMD is overwhelmingly the most likely
14 possibility.

15 Anything that might be due to other
16 factors oftentimes would involve more of the
17 precerebral arteries or other precerebral arteries.
18 If it was atherosclerosis, it would have a
19 different appearance. If it was hemodynamic, there
20 would have to be an explanation for it in terms of,
21 you know, how things work together. So, in the
22 absence of that, this is the most likely
23 possibility.

24 **Q. Doctor, I think you testified on this**
25 **before. Just to clarify, is there -- did you make**

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2 **a determination during your treatment of Mr. Singh**
3 **as to the etiology of the dysplasia?**

4 A. No.

5 **Q. Is that a condition that is congenital?**

6 A. It probably is congenital. It's most
7 commonly asymptomatic in and of itself. So,
8 therefore, most of the time it's not identified
9 even if you have it, unless there's something else
10 that might warrant you to look at the arteries.

11 The other reason that it's an important
12 finding is that in doing endovascular procedures,
13 when you have dysplastic arteries, one has to be
14 extremely careful in doing these procedures because
15 these arteries in the neck are extremely fragile,
16 and they're easily torn and you can wind up with a
17 dissection, which is a tear in the wall of the
18 artery from the catheters and wires. That's the
19 real reason that it's important to know it from a
20 standpoint of treatment.

21 **Q. So, the fragile nature of the arteries**
22 **arises out of the dysplasia?**

23 A. Yes.

24 **Q. And did you determine that the fragile**
25 **nature of Mr. Singh's arteries contributed to his**

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2 **bleed?**

3 A. Well, ultimately the artery bled, so the
4 part of the artery that bled, I guess, was fragile.
5 Again, I would not -- I would caution to draw a
6 direct correlation between the changes in the
7 cervical carotid and intracranial carotid because
8 these are two distinct diseases, even though there
9 may be an association between the two in that
10 people who have dysplastic arteries someplace may
11 be more prone to having cerebral aneurysms, but
12 that doesn't mean that the dysplasia is responsible
13 for the cerebral aneurysm.

14 Cerebral aneurysms in and of themselves
15 are, from a population basis, extremely common.
16 That being so, and the fact that the aneurysm,
17 there was nothing particularly atypical about the
18 aneurysm. There's nothing to say that this is
19 anything other than a congenital berry aneurysm.

20 **Q. Doctor, you brought films with you and I**
21 **brought films with me. I believe you said earlier**
22 **that the films you brought are only from May 10th;**
23 **is that correct?**

24 A. Yes.

25 **Q. Do we have --**

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MR. BACH: We have a view box.

Q. Doctor, would you be able to locate a film from May 10th that would show us the location of the aneurysm and would also show us what you described as what appear to be dysplasia?

A. This is a frontal projection of a left internal carotid cerebral angiogram.

Q. So, when you saw a frontal projection, are you saying --

A. Anterior posterior.

Q. Straight on.

A. Which demonstrates the presence of an abnormal collection of contrast material contained in an aneurysm arising at the top of the internal carotid artery where the internal carotid artery divides into the anterior cerebral and middle cerebral arteries.

Q. So --

A. I think I misspoke before. This aneurysm is slightly more to the anterior cerebral side than to the middle cerebral side. But it's basically internal carotid --

Q. So you mentioned contrast material, and that's some sort of material that was injected so

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that you could visualize --

A. It's an iodinated material. It's a salt that's a liquid contrast that's injected into an artery that shows up on x-rays.

Q. So, it looks like the aneurysm is sort of at the top of this T or this bifurcation?

A. Yes, that's correct.

Q. So the flow of blood is up towards the top of the T?

A. Yes.

Q. So, when you mentioned the stress on the aneurysm, are you referring to the blood rising to the top of the T and having to change directions right at the point where that aneurysm is?

A. That is correct.

Q. How can we -- is there a distinct identifier on these particular angiograms?

A. As to?

Q. As to how can we identify this for the record, this particular --

A. This is the time, 7:21 59 seconds. In other words, 7:21, or 7:22, 5:10.

Q. P.m.?

A. P.m.

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MR. McGOWEN: Off the record for a second.

(Discussion off the record.)

MR. McGOWEN: We are -- this will be Exhibit 7.

(Zablow Exhibit 7, Image 8 of 14, dated May 10, 2003, marked for identification, as of this date.)

MR. McGOWEN: Let's mark my copy -- can you make me one more tab, Exhibit 8?

(Zablow Exhibit 8, unidentified exhibit, marked for identification, as of this date.)

Q. Doctor, we've marked as Exhibit 7 the same image that you were discussing earlier, frame 8 of 14, May 10, 2003, the time 1821:59. That was the anterior posterior ones that you were describing.

Just below the T, just below where the aneurysm is, it seems to be another, something that's being highlighted by the contrast material. Do you know what that is?

A. What that is is, that's the carotid site. That's where the artery bends. That area is this area (indicating).

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Q. Oh, it would be --

A. If you look at this straight on, this looks like this in that projection (indicating).

Q. Let's put number 7 back up for a second. Now, do we have an image that will show us the -- what appeared to be dysplasia?

A. Yes.

Q. Is that the same image? Is that --

A. It's on the same image. This portion of the artery -- this is in the high part of the neck below the skull base. This frame and also this frame shows a very peculiar focal widening and narrowing.

Q. This is in a different portion of the artery from where the aneurysm is?

A. This is extracranial. This is like at the C2 level, C2, C3 level; in other words, the second vertebrae.

Q. Correct me if I'm wrong, but were you saying earlier that this condition in this -- I'll call it the lower part of the T --

A. No, this isn't in the T. This is in the --

Q. Not in the T? Is it even below that?

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A. This is -- this is -- the T is in the head.

Q. Okay.

A. This is in the neck. It's the same artery, but it's in the neck. It's the cervical carotid as opposed to the intracranial carotid.

Q. So this is considerably farther down --

A. A couple of inches.

Q. This artery --

A. Yeah. Several inches.

Q. From the aneurysm?

A. Yeah. Several inches.

Q. The condition of the artery in the area where the appearance of dysplasia is, it seems like you were telling me that that is a separate finding or it doesn't particularly relate to the aneurysm?

A. It's a separate finding. It may be an indication that the patient -- it's most likely an indication that the patient has dysplastic arteries, but these are angiograms, not biopsies. So the artery looks -- when the wall of the artery has this unusual appearance, since we can't give a precise histologic diagnosis, it's certainly regarded as being dysplastic.

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Arteries are generally smooth and they're -- they taper from large to small. They don't usually have multiple areas of out-pouching or caliber changes along the course. It's unusual. Usually when it's seen, it's usually an indication of a dysplastic problem with the artery.

Q. So the dysplasia down at the cervical level is an indication that there could be an issue with the wall of the artery up in the area of where the --

A. As well as other places.

MR. RHEINGOLD: Objection.

Q. In Mr. Singh's case, I believe you were saying that you can't say specifically what the etiology of that dysplasia is; is that correct?

A. What I said is that there are a limited number of conditions that cause dysplastic arteries. Most of the time it's problem is what's called a collagen vascular problem, which is because the wall is partly composed of collagen. Of the collagen vascular problems or dysplasias, far and away fibromuscular is the most common problem.

Other causes are unusual and they are

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associated commonly with other systemic diseases, like neurofibromatosis, like sickle-cell anemia. So, he doesn't have those diseases.

Q. In Mr. Singh's case, was there any indication as to the origin of this collagen vascular --

A. Well, again, you can't -- yeah, the answer is no. All you can say is it's an observation. And it's a radiologic finding that has a pathological corollary. The appearance is unusual and, therefore, it falls into the term of dysplasia.

I don't want to use the word it's definitely fibromuscular, because I don't know that, but it's an unusual finding. And the appearance of this artery was very, very dissimilar to all of the other arteries in the rest of his neck up to his brain. It had a more unusual appearance.

Q. When you were performing this procedure, did you -- you mentioned earlier that the -- you have to be careful because the artery can be weak or --

A. Fragile was the word I used.

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Q. When you were actually performing the procedure on Mr. Singh, did you -- was there anything about performing that that indicated to you whether this was a particularly fragile area that you were working on?

A. No. The answer is that certainly questions were taken to try to minimize the potential traumas of the wall of the artery so as not to get into a situation where there was a tear or a dissection of the artery.

Q. We can sit back down.

Can you show us where the teats are?

A. One is here (indicating). The other is here on this projection. And one here (indicating). If you look at it in the lateral projection, the aneurysm is here and one of the teats is here. You see they are two lobes?

Q. So, where was the opening that you were referring to?

A. It would have been -- right now, the opening is sealed. You're not seeing actual extrapolation or contrast, but where these aneurysms rupture would be someplace in this dome, in this teat.

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2 **Q. Okay. Do we have a film that shows the**
3 **flow of blood from the teat before you performed**
4 **the procedure?**

5 A. No. The aneurysm -- when an aneurysm
6 ruptures, the body has a mechanism to stop
7 bleeding. So the bleeding had occurred several
8 hours before this was performed. If the bleeding
9 was occurring during this, we would have a dead or
10 near-dead patient.

11 **Q. Before you actually perform the**
12 **procedure, the body's mechanisms had --**

13 A. It forms a blood clot.

14 **Q. Okay.**

15 A. And it stops the bleeding and seals the
16 perforation. It's sort of like a balloon that has
17 a hole in it or a tire that has a hole in it, and
18 the body does something to try to form a small clot
19 right on the perforation to stop the bleeding.

20 **Q. That clot probably would not have --**
21 **that was not a permanent solution, right? You**
22 **still --**

23 A. No. No. The risk of it rebleeding in
24 the first day after this occurs is around seven
25 percent. The chance that it would occur in the

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2 ventriculostomy catheter on the right side; that
3 the ventricles were decompressed well; that the
4 subarachnoid hemorrhage was unchanged compared with
5 earlier scan; that there was no acute bleeding
6 secondary to the procedure coiling, and there were
7 no acute ischemic changes of the brain.

8 **Q. So you were just reading from your note**
9 **that is -- it looks like 8:50 is the time?**

10 A. No. Yeah, 8:50, 5/10/03, 8:50 p.m.

11 **Q. Is that another note following that that**
12 **you wrote?**

13 A. No, it's -- oh, yeah, just that I wrote
14 a note. It says, Discussed results of surgery with
15 Alan Hirschfeld after CT.

16 **Q. Now, was there a subsequent series of**
17 **scans that you reviewed?**

18 A. There may be, but I don't have
19 independent recollection of that.

20 **Q. Doctor, let me show you a report that --**
21 **I'll let you tell me what it's dated, because I'm**
22 **not sure.**

23 A. The 13th.

24 **Q. Okay. Let me also show you all of**
25 **those.**

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2 first two weeks is around 30 percent. So that's
3 the reason for the urgency in trying to treat it as
4 soon as you can, because of the fact that the
5 highest incidence of rebleeding is in the first
6 several hours after it ruptures.

7 MR. MCGOWEN: All right. Let's sit back
8 down.

9 **Q. So, doctor, Mr. Singh had another series**
10 **of scans done after the procedure that you**
11 **performed?**

12 A. Yes, he did.

13 **Q. Did you review that next series of**
14 **scans?**

15 A. Yes, I did.

16 **Q. Was that on May 13th when those were**
17 **done?**

18 A. No. The same day.

19 **Q. Same day?**

20 A. Yes, same day.

21 **Q. What were your -- what observations or**
22 **findings did you make based on the next or the**
23 **second series of scans on May 10th?**

24 A. That he had a -- findings -- I'm reading
25 from my handwritten notes. Findings: He had a

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2 A. This one is a duplicate of this. It's
3 just the way they xeroxed it.

4 **Q. Okay. So, the one that is dated -- the**
5 **report that's dated May 13th, when you reviewed**
6 **this film, what were your observations or findings?**

7 A. That there was a resolving subarachnoid
8 hemorrhage. That there was a small amount of
9 intracranial blood along the course of where the
10 ventriculostomy catheter was, and there was some
11 edema or increase in water content surrounding the
12 area of hemorrhage in the anterior aspect of the
13 right basal ganglia and the anterior lateral aspect
14 of the right thalamus.

15 **Q. And doctor, do you know who Dr.**
16 **Khorsandi, K-H-O-R-S-A-N-D-I, is?**

17 A. Yes, I do.

18 **Q. Who was that?**

19 A. She was a radiologist that was employed
20 by the hospital at this time.

21 **Q. Was she working with you on --**

22 A. No, she didn't work with me.

23 **Q. I see that the -- we'll mark these**
24 **reports in a second, but I see that the one that is**
25 **dated May 24th has Dr. Khorsandi's name on it.**

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Would that be an indication that by that point -- or were you still involved in Mr. Singh's care at that point?

A. I would have been. It's just that the way -- the scan was probably not marked for my attention. It was probably marked and it just came through in a stack of other scans and was read by somebody else.

Q. So you were continuing to review his scans?

A. Yeah. Yes, I would.

Q. Based on -- what were the findings for the May 24th scan?

A. My copy is sort of cut off on the right side of the...

Q. Unfortunately, that's the way --

A. Well, I think I can sort of make this out.

Q. Okay.

A. The main finding on the scan that she's described are that there are luscencies (phonetic) in the lentiform nucleus on the right side, which is likely ischemic. In other words, it's likely a result of a vasospasm resulting from the

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subarachnoid hemorrhage.

Q. So, the vasospasm that's being -- that you're referring to now is something that occurred after Mr. Singh's bleed occurred?

A. Yes. It's a response of the cerebral arteries to the fact that the blood that's normally in the arteries is outside the arteries, so it becomes an irritant to the wall of the arteries.

Usually, at some point after three or four days, up to about two, two and a half weeks, there's a propensity for the arteries to go into spasm as a result of the irritation from the subarachnoid hemorrhage. There's a direct correlation with the likelihood that one is going to develop vasospasm related to the amount of blood that's present on the first CT scan.

So the higher the score is for the subarachnoid hemorrhage on the initial CT scan, which is called the Fisher scale, the more likelihood is that you'll get a vasospasm. There's a pretty good correlation between the two.

So if you're a grade four, the chance that you're going to get a vasospasm is very likely. If you have a grade one bleed, the

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likelihood is much lower. He was a grade four.

Q. Doctor, from the time of the procedure that you performed on through the end of the time that you provided treatment to Mr. Singh, were there any findings that changed any of the impressions that you had made up through the time of the procedure?

A. I'm not sure I can answer that. It's a very broad question.

Q. It's kind of general.

A. It's a very broad question.

Q. What was your final diagnosis for Mr. Singh?

A. Subarachnoid hemorrhage, secondary to a ruptured intracranial aneurysm. Secondary complication would be cerebral vasospasm, secondary to subarachnoid hemorrhage.

Q. That is essentially what you suspected before you performed the procedure, correct?

A. Yeah. Well, I didn't suspect that he had vasospasm, but the vasospasm is an expected complication of the subarachnoid hemorrhage given the amount of blood that he had on the scan.

MR. RHEINGOLD: Just to be clear for the

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record, you're talking about vasospasms?

THE WITNESS: Related to subarachnoid hemorrhage.

MR. RHEINGOLD: How many days after the original bleed? We're not talking acutely with the bleed.

THE WITNESS: No, no.

MR. RHEINGOLD: Right.

THE WITNESS: It's subacute.

MR. BACH: That's for the May 24th --

THE WITNESS: 23rd.

MR. BACH: 23rd CT.

THE WITNESS: Right. Just so that we're clear, the CT scans don't show you vasospasm; they show you the effects of vasospasm. And by the time you see it on the scan, where the findings are more obvious, the vasospasm has been there for a while, because what you're looking at is structural damage to the tissue.

I think there was an indication -- I'm sure there was, because I read it. Yeah. On the scan that I dictated on the 17th, I guess I dictated it -- well, I don't know who dictated it. I can't really tell, but on the

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2 scan on the 17th, there are already changes in
3 that part of the brain.

4 In the second paragraph of that report,
5 it starts to describe changes in the density
6 of the right peduncle posterior limb of the
7 internal capsule. That's all due to
8 vasospasm.

9 **Q. Again, we're talking about**
10 **postbleed vasospasm --**

11 A. Right. It's exactly -- the timing is
12 exactly what you would expect for somebody to get
13 into this kind of a situation.

14 **Q. Doctor, do you have any recollection of**
15 **Mr. Singh's, or do you have any knowledge of his**
16 **condition upon his discharge from the hospital?**

17 A. At the time he was discharged, he was
18 disabled. As to what his final disposition is, I
19 wouldn't know without reviewing his record.

20 **Q. Doctor, was there any finding that you**
21 **made that indicated to you that Mr. Singh's bleed**
22 **was a result of anything that he ingested?**

23 A. To my knowledge, no. I have no
24 knowledge of that.

25 MR. McGOWEN: Thanks, doctor.

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2 Mr. Rheingold may have some questions for you
3 and then I may have one or two follow-ups
4 after that.

5 EXAMINATION BY
6 MR. RHEINGOLD:

7 **Q. We discussed dysplasia. Is that a**
8 **finding that you can determine through**
9 **neuroradiology?**

10 A. Yes.

11 **Q. You, in fact, in this case, diagnosed**
12 **dysplasia?**

13 A. It's a descriptive term; it's not a
14 pathological term.

15 **Q. It described what we saw on the film as**
16 **a vessel that tapered abnormally?**

17 MR. McGOWEN: Objection to form.

18 A. It's more than a tapering. It's a
19 vessel that has multiple areas of contour
20 irregularity. The full answer is, where it's
21 unrelated to anything that was done to the artery
22 mechanically or as a result of trauma or something
23 that's iatrogenic.

24 **Q. How many inches did you say that was**
25 **from the aneurysm?**

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2 A. Probably three inches.

3 **Q. Did you see any evidence of dysplasia**
4 **between the aneurysm and the area you noted on the**
5 **film, which was three inches away?**

6 A. Yes. The artery doesn't have a total
7 normal contour in terms of the way it tapers.
8 There's something peculiar about the way the --
9 about the contour of this artery.

10 **Q. When we were looking at the film before,**
11 **you seemed to just isolate one section that was two**
12 **or three inches away --**

13 A. That was the more obvious area. The
14 area of abnormality actually extends more distal
15 than that, but it's less obvious.

16 **Q. Does it extend all the way to the T?**

17 A. No, it doesn't.

18 **Q. About how far from the T does it stop?**

19 A. It doesn't go intracranially. It stops
20 below -- it stops at about the level of the skull
21 base below the -- right at the level of the skull
22 base.

23 **Q. And the vessel wall is made up of**
24 **certain layers?**

25 A. Yes.

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2 **Q. With regard to the dysplasia, can you**
3 **explain the effect on any or all of the layers?**

4 A. Usually the -- usually the intima is --
5 the endothelial lining is usually normal. It's
6 usually the muscular layer of the wall of the
7 artery that's abnormal. And then the outer most
8 aspect of the wall is usually normal. So most of
9 the time, if there is a problem, it's usually in
10 the muscular portion of the second layer. It's in
11 the media, not the tissue or the intima.

12 **Q. With neuroradiology and the angiograms**
13 **we looked at, is it possible for you personally to**
14 **discern where the intima, media and outer layers**
15 **are?**

16 A. No. What you're looking at on the
17 angiogram is the intima. You're looking at the
18 lumina. You're not looking at -- the wall is not
19 visible.

20 **Q. In order to make a conclusive diagnosis**
21 **that dysplasia does, in fact, exist, would**
22 **pathology have to be done?**

23 A. Pathology would be useful for
24 characterization of the specific type of dysplasia.
25 The angiographic findings are fairly obvious and,

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2 therefore, in terms of characterization of a
3 dysplasia, I think you could safely characterize
4 the artery as being dysplastic, as a descriptive
5 term. But if you want to know the precise
6 pathology of the wall of the artery, you'd have to
7 biopsy and remove a segment of the artery, which
8 would be ridiculous.

9 **Q. And with regard to the -- in your**
10 **report, you mentioned fibromuscular dysplasia.**

11 A. Right.

12 **Q. Is that a definitive diagnosis you made?**

13 A. No, I suggested. I said it doesn't have
14 the classic appearance, but it's certainly within
15 the spectrum of that. And lacking any of the other
16 diseases that would be commonly associated with
17 dysplasia, that overwhelmingly is the most likely
18 possibility.

19 And he's not African-American, so you
20 know he's not going to be a sickle-cell problem.
21 He doesn't have neurofibromatosis as far as we
22 knew. He doesn't have a lot of the other types of
23 diseases, at least that were ever disclosed. So I
24 think it's just a, you know, just an observation.

25 It's a descriptive -- description of what's the

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2 matter with the artery.

3 **Q. Does the vessel become weakened with**
4 **dysplasia?**

5 A. Generally, when you have dysplasia in
6 the carotid artery in the neck, it generally does
7 not cause a problem. The reason being is that it's
8 not a disease that causes a -- your carotid artery
9 in your neck is not going to rupture. It's a much
10 heavier artery, much bigger artery, much sturdier
11 artery than the intracranial vessel is. So
12 generally, it doesn't cause problems in that
13 regard.

14 There may be problems that are
15 stroke-related problems that can deal with stenosis
16 or things like that, which are not present. And
17 it's not uncommon in people who have it in one spot
18 that sometimes their renal arteries are involved
19 and they may have problems with hypertension.

20 So it's not a problem that's generally
21 in one area. There may be other areas with a
22 problem. The most common areas would be the
23 carotid arteries, the renal arteries.

24 **Q. Now, turning to the aneurysm you've**
25 **described, this is a berry aneurysm?**

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2 A. Right.

3 **Q. And either specifically talking about**
4 **Mr. Singh's aneurysm or aneurysms in general,**
5 **whichever you prefer, do they have various layers**
6 **to the vessel wall?**

7 A. Well, they don't have a vessel wall.
8 What they have is the intima. The reason it forms
9 is that the media and the adventitia are deficient
10 and the intima herniates through the wall of the
11 vessel. So all they have is an intima lining and a
12 few fibers of the muscular wall that they kind of
13 drag with them on the base of the aneurysm. So
14 they are what they are.

15 **Q. And you described a finding that he had**
16 **two, I call it teats, you call them tits?**

17 A. Domes, yes. Teats or domes.

18 **Q. Teats or domes.**

19 **Are they also just intimal lining?**

20 A. They're intimal lining that's already
21 become thinner. So they're extremely thin.

22 **Q. Do you know for 100 percent surety that**
23 **the aneurysm broke at the domes?**

24 A. Based on the appearance of this blood on
25 the first CAT scan, this aneurysm, the aneurysm

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2 that ruptured, from that CAT scan would be a
3 midline aneurysm, and it would be an aneurysm that
4 ruptured superiorly.

5 So, the domes or the teats on the
6 aneurysms are on the exact spot where you would
7 expect this to have ruptured to create the pattern
8 of the blood that would be on that CT scan. It
9 fits perfectly. The correlation is perfect with
10 the scan.

11 **Q. Would the dome area be even weaker than**
12 **the other areas of the aneurysm?**

13 A. Yes.

14 **Q. There was a word you used before that**
15 **began with bi. It was the area where this was,**
16 **bifurcation.**

17 A. Bifurcation.

18 **Q. Bifurcation. For bifurcation aneurysms**
19 **in this area, is there any normal size?**

20 A. No. They can be small. They can be
21 large. They can be giant.

22 **Q. How large was this one?**

23 A. Seven millimeters.

24 **Q. How large can they get?**

25 A. They don't usually get large, because

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2 usually when they get to the point where they're
3 more than four or five millimeters, they usually
4 rupture.

5 **Q. Do people have these aneurysms and they**
6 **never rupture during their lifetime?**

7 A. Yes. There are people that have them
8 that don't rupture.

9 **Q. Have there been any studies that you're**
10 **aware of with regard to percentages?**

11 A. Well, if you do autopsies on population,
12 three to five percent of the population at autopsy
13 will have aneurysms in some location. In the
14 United States, per year, there are around 60,000
15 subarachnoid hemorrhages, which about 50,000 are
16 probably due to ruptured aneurysms.

17 So if you take, at a minimum, three
18 percent of 300 million people, that would probably
19 give you the lower incidence of how common
20 aneurysms are. If you look at the number of people
21 who rupture, it's whatever the 50,000 is out of the
22 three percent, if you take the lower figure of five
23 percent or if you take the higher figure.

24 What's the predictor of whether this
25 aneurysm would rupture is the fact that there was

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2 domes on that aneurysm. Once an aneurysm has that
3 morphology, those aneurysms are not going to be
4 around for a long time.

5 **Q. Why is that?**

6 A. Because it's a focal area of the lumene
7 of the aneurysm that's -- of the wall of the
8 aneurysm that's already starting out very, very
9 thin, and it's almost at the point where it's
10 translucent. If you look at it under a microscope,
11 you can actually see the blood, you know, inside
12 the arteries, swirling around inside the artery.
13 It's paper thin, paper thin.

14 **Q. To the best of your knowledge, with**
15 **Mr. Singh, no one's ever grossly visualized this**
16 **aneurysm; is that correct?**

17 A. No. His treatment was all endovascular.
18 It didn't require craniotomy.

19 **Q. And you treated this with coils?**

20 A. Platinum coils.

21 **Q. To this day, they have been a great**
22 **result.**

23 A. Yes, to my knowledge.

24 **Q. Well, I'm telling you.**

25 **Were there any other treatment regimens**

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2 **available to you that you considered at that time,**
3 **other than platinum coiling?**

4 A. The other treatment alternative would
5 have been a craniotomy and clipping the aneurysm.
6 That was discussed with Dr. Hirschfeld and the
7 clinical grade of the patient at the time that he
8 presented.

9 The morphology of the aneurysm on the
10 angiogram, the location of the aneurysm, the
11 location of the perforator arteries, which are
12 these tiny little arteries which supply very
13 critical areas of the brain, being right next to
14 the aneurysm, all mitigated against doing a
15 craniotomy to essentially achieve a similar result
16 or maybe not as good a result.

17 MR. RHEINGOLD: That's all I have.

18 MR. McGOWEN: I don't have anything
19 more.

20 Let's mark these last CTs.

21 (Zablow Exhibit 9, CT scan, marked for
22 identification, as of this date.)

23 (Zablow Exhibit 10, CT scan, marked for
24 identification, as of this date.)

25 (Zablow Exhibit 11, CT scan, marked for

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2 identification, as of this date.)
3 (Time noted: 4:20 p.m.)

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2 C E R T I F I C A T E
3 S T A T E O F N E W Y O R K)
4 : s s .
5 C O U N T Y O F K I N G S)

6
7 I, PENNY SHERMAN, a Shorthand Reporter
8 and Notary Public within and for the State of New
9 York, do hereby certify:

10 That BRUCE CHARLES ZABLOW, the witness
11 whose deposition is hereinbefore set forth, was
12 duly sworn by me and that such deposition is a true
13 record of the testimony given by the witness.

14 I further certify that I am not related
15 to any of the parties to this action
16 by blood or marriage, and that I am in no way
17 interested in the outcome of this
18 matter.

19 IN WITNESS WHEREOF, I have hereunto set
20 my hand this 17th day of January, 2007.

21
22
23 PENNY SHERMAN
24
25

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1 Zablow Exhibit 10, CT scan, marked for
2 identification

3 Zablow Exhibit 11, CT scan, marked for
4 identification 68
5 *****

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1 *** ERRATA SHEET ***
2 NAME OF CASE: IN RE: EPHEDRA PRODUCTS LIABILITY LITIGATION
3 DATE OF DEPOSITION: JANUARY 10, 2007
4 WITNESS: BRUCE CHARLES ZABLOW
5 PAGE LINE FROM TO

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18
19 BRUCE CHARLES ZABLOW

20 Subscribed and sworn to before me
21 this ____ day of _____, 2007.

22
23 (Notary Public) My Commission Expires:
24
25

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